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# Add Health Wave IV Documentation

## Prescription Medication Use

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## Introduction

Data on respondent use of prescription and select over-the-counter (aspirin-containing and non-steroidal anti-inflammatory) medications were collected during the Wave IV in-home interview. The process of collecting the prescription medication data, therapeutically classifying the prescription medications, and structuring a file of the therapeutic classifications for dissemination to users is described below. The questions concerning use of aspirin-containing and non-steroidal anti-inflammatory medications are detailed in the Section 6 codebook of the in-home interview.

## Collection of Prescription Medication Data

### Initial Contact

At the end of the phone conversation confirming the interview appointment date and time, the field interviewer told the respondent that information on use of medications would be collected at the interview. The interviewer also suggested that it would help to have their medications handy at that time so they could be recorded properly. Doing so alerted the respondent to bring medication containers to the interview.

### Interview

Medication data were collected at the end of the Biomarker section of the interview using a computer-assisted questionnaire. The questions followed a preface read by the interviewer to the respondent:

“As you know, I want to record all prescription medications that you have used in the past four weeks. These medications include solid and non-solid formulations that you may swallow, inhale, apply to the skin or hair, inject, implant, or place in the ears, eyes, nose, mouth, or any other part of the body. (If female add: This also includes prescription birth control.)”

This preface was followed by **Question 1**:

“Have you taken any prescription medications in the last four weeks?”

Of the 15,701 Wave IV respondents, 9,876 (63%) answered “No”, 5,820 (37%) “Yes”, 4 (<1%) “Don’t know”, and 1 (<1%) refused to answer the question. If the respondent answered “Yes”, the interviewer was presented with the following instruction:

“If the interview is being conducted in the respondent’s home or the medications are conveniently available (e.g., in a purse) ask the respondent to assemble the medications or their containers now so that you can record information about them. If the respondent is unable or unwilling to assemble them now, ask him/her to list them from memory.”

The interviewer then recorded whether the respondent presented each medication or its container at the interview or listed the medication name from memory. Of the 10,711 medications reported by the 5,820 respondents who answered “Yes” to Question 1, 2,345 (22%) were from memory.

Next, the interviewer typed the name of each medication, one by one, into the computer. As the interviewer began typing each medication name, a look-up list of medications with identical or

similar names was displayed on screen. The interviewer highlighted and selected the name on the look-up list matching each medication. In the absence of a matching name on the look-up list, the interviewer typed "Name not on list".

During the Wave IV Pretest, the look-up list of medications available to the interviewer was based on an August 1, 2006 copy of a medication information and classification database (Multum Lexicon™, Cerner Multum, Inc.; Denver, CO). This look-up list was created by excerpting all 15,871 generic and brand names that were included in the database at that time. New medication names were added to the look-up list on December 17, 2007, bringing the total to 18,110 medication names during the Wave IV Main Study.

When the medication name typed by the interviewer was not on the look-up list, the interviewer manually keyed the entire medication name. Of the 10,711 medications reported by respondents, 117 (1%) were manually keyed by the interviewer. The medication name was recalled from memory for 50 (43%) of these 117 medications.

After the first medication was entered, the interviewer asked **Question 2:**

"Do you take any additional medications?"

To this question, 2,533 (43.5%) respondents replied, "Yes". For those responding "Yes", the second medication was entered into the computer as described above and Question 2 was repeated until the respondent reported taking no other medications. Wave IV respondents who reported taking medication took an average of 1.8 (range: 1-18) medications.

### **Therapeutic Classification of Prescription Medications**

In 2009, a contract allowing for therapeutic classification of the prescription medications in the look-up list using an updated version of the Multum Lexicon™ (Lexicon Plus™, Lexi-Comp®, Inc.; Hudson, OH) was executed. Of the 10,711 medications reported by respondents, 153 (1%) could not be automatically assigned to a therapeutic class using this database. A general internist and cardiovascular epidemiologist with expertise in medication classification manually assigned therapeutic classes to the 153 medications using two on-line coding databases (Lexi-Comp® On-Line™, Lexi-Comp®, Inc.; Hudson, OH and MICROMEDEX® 1.0, Thomson Reuters Healthcare, Inc; Philadelphia, PA). The Wave IV medication file therefore contains the therapeutic class for 10,711 medications.

In the data file, the nine-digit therapeutic classification codes associated with each medication include a hierarchical series of up to three, three-digit codes representing, from left to right, the (general) therapeutic class, the (more specific) therapeutic subclass, and (most specific) therapeutic subgroup. For example, a medication coded 001-009-161 is in the anti-infective class, cephalosporins subclass, and third generation cephalosporins subgroup. A medication coded 001-018-\*\*\* is in the anti-infective class and aminoglycosides subclass. In other words, three, right-sided asterisks (\*\*\*) in the nine-digit code indicate that subgrouping was impossible and six (\*\*\*-\*\*\*) indicate that both subclassification and subgrouping were impossible. A medication coded 998-998-998 indicates that the respondent could not (or refused to) name the medication he / she reported taking, or that classification of it was impossible.

Because the study did not collect indications for treatment and some medications are used on- or off-label to treat a variety of conditions, each medication may be associated with up to four unique, nine-digit therapeutic classification codes, i.e. Sets 1-4. See Therapeutic Classification Codes below to link the three-digit codes and the corresponding class, subclass, and subgroup names.

## Structure of the Prescription Medication Data File

The disseminated prescription medication data file is hierarchical, i.e. it is a medication-level file with the therapeutic classification for each medication listed as one observation. If a respondent reported taking more than one medication, the respondent AID will be in the file more than once. The file includes the following variables:

AID	Respondent identifier
SET1	Therapeutic Classification – Set 1
SET2	Therapeutic Classification – Set 2
SET3	Therapeutic Classification – Set 3
SET4	Therapeutic Classification – Set 4
MED_TOT	Total number of medications reported by the respondent

***Given all of the former complexities, Add Health users possessing no to little prior experience working with medication data are strongly advised to collaborate with a health care professional familiar with the challenges and pitfalls associated with doing so.***

<b>Table. Therapeutic Classification Codes</b>	
<b>Code</b>	<b>Name</b>
001	anti-infectives
002	amebicides
003	anthelmintics
004	antifungals
005	antimalarial agents
006	antituberculosis agents
007	antiviral agents
008	carbapenems
009	cephalosporins
010	leprostatics
011	macrolide derivatives
012	miscellaneous antibiotics
013	penicillins
014	quinolones
015	sulfonamides
016	tetracyclines
017	urinary anti-infectives
018	aminoglycosides
019	antihyperlipidemic agents
020	antineoplastics
021	alkylating agents
022	antibiotics/antineoplastics
023	antimetabolites
024	hormones/antineoplastics
025	miscellaneous antineoplastics
026	mitotic inhibitors
027	radiopharmaceuticals
028	biologicals
030	antitoxins and antivenins
031	bacterial vaccines
032	colony stimulating factors
033	immune globulins
034	in vivo diagnostic biologicals
036	recombinant human erythropoietins
037	toxoids
038	viral vaccines
039	miscellaneous biologicals
040	cardiovascular agents
041	agents for hypertensive emergencies
042	angiotensin converting enzyme inhibitors
043	antiadrenergic agents, peripherally acting
044	antiadrenergic agents, centrally acting
045	antianginal agents
046	antiarrhythmic agents
047	beta-adrenergic blocking agents
048	calcium channel blocking agents
049	diuretics
050	inotropic agents
051	miscellaneous cardiovascular agents
052	peripheral vasodilators

053	vasodilators
054	vasopressors
055	antihypertensive combinations
056	angiotensin II inhibitors
057	central nervous system agents
058	analgesics
059	miscellaneous analgesics
060	narcotic analgesics
061	nonsteroidal anti-inflammatory agents
062	salicylates
063	analgesic combinations
064	anticonvulsants
065	antiemetic/antivertigo agents
066	antiparkinson agents
067	anxiolytics, sedatives, and hypnotics
068	barbiturates
069	benzodiazepines
070	miscellaneous anxiolytics, sedatives and hypnotics
071	CNS stimulants
072	general anesthetics
073	muscle relaxants
074	neuromuscular blocking agents
076	miscellaneous antidepressants
077	miscellaneous antipsychotic agents
079	psychotherapeutic combinations
080	miscellaneous central nervous system agents
081	coagulation modifiers
082	anticoagulants
083	antiplatelet agents
084	heparin antagonists
085	miscellaneous coagulation modifiers
086	thrombolytics
087	gastrointestinal agents
088	antacids
089	anticholinergics/antispasmodics
090	antidiarrheals
091	digestive enzymes
092	gallstone solubilizing agents
093	GI stimulants
094	H2 antagonists
095	laxatives
096	miscellaneous GI agents
097	hormones
098	adrenal cortical steroids
099	antidiabetic agents
100	miscellaneous hormones
101	sex hormones
102	contraceptives
103	thyroid drugs
104	immunosuppressive agents
105	miscellaneous agents
106	antidotes
107	chelating agents
108	cholinergic muscle stimulants
109	local injectable anesthetics
110	miscellaneous uncategorized agents
111	psoralens

112	radiocontrast agents
113	genitourinary tract agents
114	illicit (street) drugs
115	nutritional products
116	iron products
117	minerals and electrolytes
118	oral nutritional supplements
119	vitamins
120	vitamin and mineral combinations
121	intravenous nutritional products
122	respiratory agents
123	antihistamines
124	antitussives
125	bronchodilators
126	methylxanthines
127	decongestants
128	expectorants
129	miscellaneous respiratory agents
130	respiratory inhalant products
131	antiasthmatic combinations
132	upper respiratory combinations
133	topical agents
134	anorectal preparations
135	antiseptic and germicides
136	dermatological agents
137	topical anti-infectives
138	topical steroids
139	topical anesthetics
140	miscellaneous topical agents
141	topical steroids with anti-infectives
143	topical acne agents
144	topical antipsoriatics
146	mouth and throat products
147	ophthalmic preparations
148	otic preparations
149	spermicides
150	sterile irrigating solutions
151	vaginal preparations
153	plasma expanders
154	loop diuretics
155	potassium-sparing diuretics
156	thiazide diuretics
157	carbonic anhydrase inhibitors
158	miscellaneous diuretics
159	first generation cephalosporins
160	second generation cephalosporins
161	third generation cephalosporins
162	fourth generation cephalosporins
163	ophthalmic anti-infectives
164	ophthalmic glaucoma agents
165	ophthalmic steroids
166	ophthalmic steroids with anti-infectives
167	ophthalmic anti-inflammatory agents
168	ophthalmic lubricants and irrigations
169	miscellaneous ophthalmic agents
170	otic anti-infectives
171	otic steroids with anti-infectives

172	miscellaneous otic agents
173	HMG-CoA reductase inhibitors
174	miscellaneous antihyperlipidemic agents
175	protease inhibitors
176	NRTIs
177	miscellaneous antivirals
178	skeletal muscle relaxants
179	skeletal muscle relaxant combinations
180	adrenergic bronchodilators
181	bronchodilator combinations
182	androgens and anabolic steroids
183	estrogens
184	gonadotropins
185	progestins
186	sex hormone combinations
187	miscellaneous sex hormones
191	narcotic analgesic combinations
192	antirheumatics
193	antimigraine agents
194	antigout agents
195	5HT <sub>3</sub> receptor antagonists
196	phenothiazine antiemetics
197	anticholinergic antiemetics
198	miscellaneous antiemetics
199	hydantoin anticonvulsants
200	succinimide anticonvulsants
201	barbiturate anticonvulsants
202	oxazolidinedione anticonvulsants
203	benzodiazepine anticonvulsants
204	miscellaneous anticonvulsants
205	anticholinergic antiparkinson agents
206	miscellaneous antiparkinson agents
208	SSRI antidepressants
209	tricyclic antidepressants
210	phenothiazine antipsychotics
211	platelet aggregation inhibitors
212	glycoprotein platelet inhibitors
213	sulfonylureas
214	non-sulfonylureas
215	insulin
216	alpha-glucosidase inhibitors
217	bisphosphonates
218	alternative medicines
219	nutraceutical products
220	herbal products
222	penicillinase resistant penicillins
223	antipseudomonal penicillins
224	aminopenicillins
225	beta-lactamase inhibitors
226	natural penicillins
227	NNRTIs
228	adamantane antivirals
229	purine nucleosides
230	aminosalicylates
231	nicotinic acid derivatives
232	rifamycin derivatives
233	streptomyces derivatives



234	miscellaneous antituberculosis agents
235	polyenes
236	azole antifungals
237	miscellaneous antifungals
238	antimalarial quinolines
239	miscellaneous antimalarials
240	lincomycin derivatives
241	fibrin acid derivatives
242	psychotherapeutic agents
243	leukotriene modifiers
244	nasal lubricants and irrigations
245	nasal steroids
246	nasal antihistamines and decongestants
247	nasal preparations
248	topical emollients
249	antidepressants
250	monoamine oxidase inhibitors
251	antipsychotics
252	bile acid sequestrants
253	anorexiant
254	immunologic agents
256	interferons
257	immunosuppressive monoclonal antibodies
261	heparins
262	coumarins and indandiones
263	impotence agents
264	urinary antispasmodics
265	urinary pH modifiers
266	miscellaneous genitourinary tract agents
267	ophthalmic antihistamines and decongestants
268	vaginal anti-infectives
269	miscellaneous vaginal agents
270	antipsoriatics
271	thiazolidinediones
272	proton pump inhibitors
273	lung surfactants
274	cardioselective beta blockers
275	non-cardioselective beta blockers
276	dopaminergic antiparkinsonism agents
277	5-aminosalicylates
278	cox-2 inhibitors
279	gonadotropin releasing hormones
280	thioxanthenes
281	neuraminidase inhibitors
282	meglitinides
283	thrombin inhibitors
284	viscosupplementation agents
285	factor Xa inhibitors
286	mydriatics
287	ophthalmic anesthetics
288	5-alpha-reductase inhibitors
289	antihyperuricemic agents
290	topical antibiotics
291	topical antivirals
292	topical antifungals
293	glucose elevating agents
295	growth hormones

296	inhaled corticosteroids
297	mucolytics
298	mast cell stabilizers
299	anticholinergic bronchodilators
300	corticotropin
301	glucocorticoids
302	mineralocorticoids
303	agents for pulmonary hypertension
304	macrolides
305	ketolides
306	phenylpiperazine antidepressants
307	tetracyclic antidepressants
308	SSNRI antidepressants
309	miscellaneous antidiabetic agents
310	echinocandins
311	dibenzazepine anticonvulsants
312	cholinergic agonists
313	cholinesterase inhibitors
314	antidiabetic combinations
315	glycylcyclines
316	cholesterol absorption inhibitors
317	antihyperlipidemic combinations
318	insulin-like growth factor
319	vasopressin antagonists
320	smoking cessation agents
321	ophthalmic diagnostic agents
322	ophthalmic surgical agents
323	antineoplastic monoclonal antibodies
324	antineoplastic interferons
325	sclerosing agents
327	antiviral combinations
328	antimalarial combinations
329	antituberculosis combinations
330	antiviral interferons
331	radiologic agents
332	radiologic adjuncts
333	miscellaneous iodinated contrast media
334	lymphatic staining agents
335	magnetic resonance imaging contrast media
336	non-iodinated contrast media
337	ultrasound contrast media
338	diagnostic radiopharmaceuticals
339	therapeutic radiopharmaceuticals
340	aldosterone receptor antagonists
341	atypical antipsychotics
342	renin inhibitors
343	tyrosine kinase inhibitors
344	nasal anti-infectives
345	fatty acid derivative anticonvulsants
346	gamma-aminobutyric acid reuptake inhibitors
347	gamma-aminobutyric acid analogs
348	triazine anticonvulsants
349	carbamate anticonvulsants
350	pyrrolidine anticonvulsants
351	carbonic anhydrase inhibitor anticonvulsants
352	urea anticonvulsants
353	anti-angiogenic ophthalmic agents

354	H. pylori eradication agents
355	functional bowel disorder agents
356	serotonergic neuroenteric modulators
357	growth hormone receptor blockers
358	metabolic agents
359	peripherally acting antiobesity agents
360	lysosomal enzymes
361	miscellaneous metabolic agents
362	chloride channel activators
363	probiotics
364	antiviral chemokine receptor antagonist
365	medical gas
366	integrase strand transfer inhibitor
368	non-ionic iodinated contrast media
369	ionic iodinated contrast media
370	otic steroids
371	dipeptidyl peptidase 4 inhibitors
372	amylin analogs
373	incretin mimetics
374	cardiac stressing agents
375	peripheral opioid receptor antagonists
376	radiologic conjugating agents
377	prolactin inhibitors
378	drugs used in alcohol dependence
379	next generation cephalosporins
380	topical debriding agents
381	topical depigmenting agents
382	topical antihistamines
383	antineoplastic detoxifying agents
384	platelet-stimulating agents
385	group I antiarrhythmics
386	group II antiarrhythmics
387	group III antiarrhythmics
388	group IV antiarrhythmics
389	group V antiarrhythmics
390	hematopoietic stem cell mobilizer
391	mTOR kinase inhibitors
392	otic anesthetics
393	cerumenolytics
394	topical astringents